We claim:

1. A telechelic (co)polymer comprising polymerized units of one or more free radically (co)polymerizable monomers,
an first azlactone terminal group; and
a second dithiocarbamate terminal group.

2. The copolymer of claim 1 comprising two or more blocks of units obtained from free radically (co)polymerizable monomers, wherein the block copolymer has an azlactone residue at one terminal end and a dithiocarbamate group at the other terminal end.

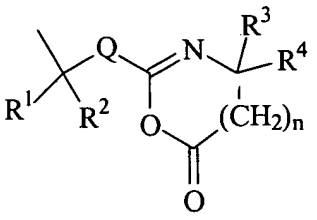
3. The (co)polymer of claim 1 comprising polymerized units obtained from two or more radically (co)polymerizable monomers wherein the copolymer has a composition that varies along the length of the polymer chain from azlactone terminus to opposite terminus based on the relative reactivity ratios of the monomers and instantaneous concentrations of the monomers during polymerization.

4. The (co)polymer of claim 1, wherein said (co)polymer comprises polymerized monomer units selected from the group consisting of (meth)acrylic acid and esters thereof; fumaric acid and esters thereof; itaconic acid and esters thereof; maleic anhydride; styrene; α-methyl styrene; vinyl halides; (meth)acrylonitrile, vinylidene halides; butadienes; unsaturated alkylsulphonic acids and esters and halides thereof; and (meth)acrylamides, and mixtures thereof; said (co)polymer having an azlactone residue at one end of the (co)polymer chain and a radically transferable group at the other end of the (co)polymer chain.

5. The (co)polymer of claim 1 having the structure
Az-$(M^1)_x$-DiTC, wherein
DiTC is a dithiocarbamate of the formula R^5R^6N-C(S)-S, where R^5 and R^6 are each independently selected from an alkyl group, a cycloalkyl group, an aryl group, an arenyl group, a heterocyclic group, or R^5 and R^6 taken together with the nitrogen to which they are attached form a heterocyclic ring;

M^1 is a monomer unit derived from a radically (co)polymerizable monomer unit having an average degree of polymerization x, and

Az is an azlactone group of the formula:



wherein R^1 and R^2 are each independently selected from X, H, an alkyl group, a cycloalkyl group, a heterocyclic group, an arenyl group and an aryl group, or R^1 and R^2 taken together with the carbon to which they are attached form a carbocyclic ring;

R^3 and R^4 are each independently selected from an alkyl group, a cycloalkyl group, an aryl group, an arenyl group, or R^3 and R^4 taken together with the carbon to which they are attached form a carbocyclic ring;

Q is a linking group selected from a covalent bond, $(-CH_2-)_o$, $-CO-O-(CH_2)_o-$, $-CO-O-(CH_2CH_2O)_o-$, $-CO-NR^6-(CH_2)_o-$,$-CO-S-(CH_2)_o-$, where o is 1 to 12, and R^6 is H, an alkyl group, a cycloalkyl group, an arenyl group, a heterocyclic group or an aryl group;

and n is 0 or 1.

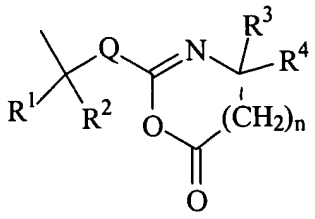
6. The (co)polymer of claim 1 having the structure

$Az-(M^1)_x(M^2)_x-(M^3)_x\ldots(M^\Omega)_x-DiTC$, wherein

DiTC is a dithiocarbamate of the formula $R^5R^6N-C(S)-S$, where R^5 and R^6 are each independently selected from an alkyl group, a cycloalkyl group, an aryl group, an arenyl group, or R^5 and R^5 taken together with the carbon to which they are attached form a carbocyclic ring;

M^1 to M^Ω are each polymer blocks of monomer units derived from a radically (co)polymerizable monomer units having an average degree of polymerization x, each x is independent, and

Az is an azlactone group of the formula:



wherein R^1 and R^2 are each independently selected from X, H, an alkyl group, a cycloalkyl group, a heterocyclic group, an arenyl group and an aryl group, or R^1 and R^2 taken together with the carbon to which they are attached form a carbocyclic ring; R^3 and R^4 are each independently selected from an alkyl group, a cycloalkyl group, an aryl group, an arenyl group, or R^3 and R^4 taken together with the carbon to which they are attached form a carbocyclic ring; Q is a linking group selected from a covalent bond, $(-CH_2-)_o$, -CO-O-$(CH_2)_o$-, -CO-O-$(CH_2CH_2O)_o$-, -CO-NR^8-$(CH_2)_o$-,-CO-S-$(CH_2)_o$-, where o is 1 to 12, and R^8 is H, an alkyl group, a cycloalkyl group, an arenyl group, a heterocyclic group or an aryl group; and n is 0 or 1.

7. The (co) polymer of claim 1 having a star, comb, block, or hyperbranched structure.

8. The (co) polymer of claim 1 having pendent, nucleophilic functional groups.

9. The (co)polymer of claim 1 comprising interpolymerized monomer units having pendent, nucleophilic functional groups.

10. The (co) polymer of claim 7 having pendent, nucleophilic functional groups.

11. A polymer derived from the pendent, nucleophilic functional groups of claim 10 and said azlactone terminal group.